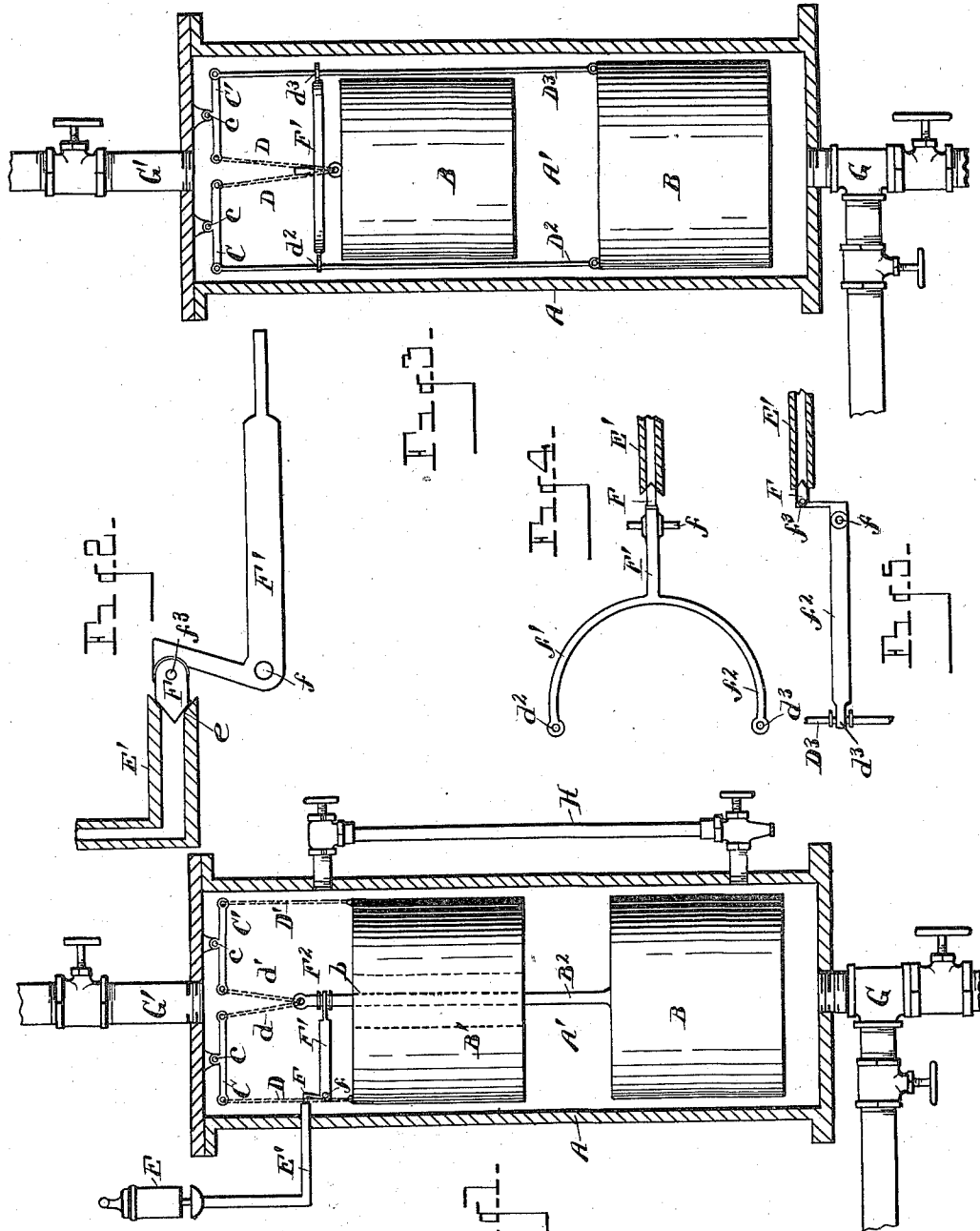


(No Model.)

J. N. BROWNLEE.
HIGH OR LOW WATER ALARM.

No. 579,513.

Patented Mar. 23, 1897.



WITNESSES

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JOHN N. BROWNLEE, OF DETROIT, MICHIGAN.

HIGH OR LOW WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 579,513, dated March 23, 1897.

Application filed June 17, 1896. Serial No. 595,845. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. BROWNLEE, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in High or Low Water Alarms; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object a novel high and low water alarm device of superior utility and efficiency; and it consists of the construction, combination, and arrangement of devices hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in vertical section through the case, showing other features in elevation. Fig. 2 is a detail view of portions of the valve mechanism, partly in section and partly in elevation. Fig. 3 is a vertical section through the case, showing parts in elevation, illustrating a modification of my invention. Fig. 4 is a detail view in plan of the valve and its operating-lever. Fig. 5 is a view of the same in side elevation.

My improved device consists, essentially, of a case or water-column A, forming an interior chamber A', in which are located solid metal weights B and B'. The upper weight is made somewhat lighter than the lower weight in order to preserve a balance when the lower weight is submerged in water within said chamber. The weights are suspended upon eveners C C', fulcrumed intermediate their ends to the upper portion of the case, as shown at c, one end of each of said eveners being connected with the upper weight B', the opposite ends of said eveners being connected with the lower weight B. In Figs. 1 and 2 the upper weight B' is shown connected to each of said eveners by means of chains or cables D D'. In Fig. 1 these chains connect the outer extremities of the eveners with the upper weight. In Fig. 3 these chains connect the inner ends of the eveners with the upper weight.

In Fig. 1 the lower weight B is shown provided with an upwardly-projecting stem or

rod B², passing through a vertical orifice in the weight B', (indicated in dotted lines in Fig. 1 and by the reference-letter b.) In this construction the inner ends of the eveners are connected by chains d d' with the upper end of said stem or rod B².

In Fig. 3 the lower weight B, instead of being provided with the stem or rod B², is shown connected with the outer ends of said eveners by rods D² and D³, extending upward outside the weight B'.

E represents a whistle supported upon a steam-pipe E', formed with a valve-seat at its inner end, as shown at e. F is a valve to control the admission of steam into the steam-pipe E' within the chamber A'. This valve F is provided with a bell-crank arm F', fulcrumed within the case, as indicated at f. In Fig. 1 this bell-crank arm F' is shown engaged with the stem or rod B², as indicated at F², so that as the weight B rises or falls it will actuate the arm F' to open or close the valve F.

The construction indicated in Figs. 3, 4, and 5, as pertains to the construction and operation of the valve, is every way analogous to that indicated in Figs. 1 and 2, except that in these latter figures the bell-crank arm F' is bifurcated, as more clearly shown at f' and f² in Fig. 4, to engage at their extremities the rods D² D³, as indicated at d² d³. I do not limit myself, however, solely to this particular construction and form of valve, as any suitable valve may be employed within the scope of my invention to control communication with the steam-pipe E', actuated by the movement of one of said weights within the chamber A'.

The device is operated, as will be clearly seen, by the difference between the specific gravity of steam or air and the specific gravity of water, or, in other words, by the difference in gravity of the weights in the water and out of the water.

As shown, the case A is so formed that the two weights have a direct vertical movement with changes in the water-line. Should the water fall in the column below the normal line or rise thereabove it is apparent that the differences of gravity in the changed relations of the weights would cause the lower weight to descend, thereby actuating the

valve and causing the signal to sound. While I have shown the eveners C C' connected with the weights, as above described, other means of connection might be made to allow the
5 weights to rise and fall within the scope of my invention.

The weights being made solid are free from the objections well known in the use of hollow floats, as with the solid weights there is
10 no inner chamber liable to fill with water, thereby destroying the efficacy of the device.

The valve F is jointly connected with the lever F', as shown at f³.

G and G' denote the boiler connection with
15 the water-column, and H the water-gage.

What I claim as my invention is—

1. In a high and low water alarm, the combination with a single water-column, of weights located directly one above the other there-
20 within and in the same vertical line, two independent eveners within the column fulcrumed intermediate their ends to the top of the column, the ends of each of said eveners connected the one with the lower weight and
25 the other with the upper weight, a signaling device, and a valve actuated by the movement of the weights, substantially as set forth.

2. In a high and low water alarm, the combination with a single water-column, of weights
30 of different gravity, movably supported there-

within one directly above the other and in the same vertical line, two independent eveners within the column fulcrumed to the top thereof, the ends of each of said eveners connected the one with the lower weight and the
35 other with the upper weight, a signaling device, and a valve provided with a bell-crank arm actuated by the movement of the weights, the differences of gravity in the changed relations of the weights when the water rises or
40 falls within the column causing the lower weight to descend and thereby to sound a signal, substantially as set forth.

3. In a high and low water alarm, the combination with a single water-column, of solid
45 metal weights movably located one directly above the other therewithin and in the same vertical line, two independent eveners within the column fulcrumed to the top of the column, the ends of each of said eveners con-
50 nected the one to the lower weight and the other with the upper weight, a signaling device, and a valve actuated by the movement of said weights substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN N. BROWNLEE.

Witnesses:

N. S. WRIGHT,

JOHN F. MILLER.